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ABSTRACT

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TOWARDS AN ECOLOGY OF LEARNING:
THE CASE OF CLASSROOM DISCOURSE AND ITS EFFECTS ON WRITING IN HIGH SCHOOL ENGLISH AND SOCIAL STUDIES

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The Center on English Learning & Achievement (CELA) is a national research and development center located at the University of Albany, State University of New York, in collaboration with the University of Wisconsin-Madison. Additional research is conducted at the Universities of Oklahoma and Washington.

The Center, established in 1987, initially focused on the teaching and learning of literature. In March 1996, the Center expanded its focus to include the teaching and learning of English, both as a subject in its own right and as it is learned in other content areas. CELA's work is sponsored by the Office of Educational Research and Improvement (OERI), U.S. Department of Education, as part of the National Institute on Student Achievement, Curriculum, and Assessment.

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Despite substantial research on children's literacy performance outside school, relatively few studies have examined the classroom context of writing development, and even fewer have considered the relationship between general classroom discourse and writing. This paper presents an ecological framework for studying the relation between classroom discourse and writing. The framework emphasizes the reciprocal roles of teachers and students and focuses on the types of questions teachers and students ask as indicators of classroom discourse. The framework is assessed with data on discourse and writing in 54 ninth-grade English classes and 48 ninth-grade social studies classes. In both subjects, the authors find that classroom discourse and writing activities tend to proceed independently of one another. Regression analyses show that student writing benefits from classroom talk, especially when teachers ask "authentic questions" (questions for which teachers are not looking for particular answers) and incorporate student responses into the questions they pose (known as "uptake"). Student writing is also enhanced by instructional coherence among reading, writing, and classroom talk. Students who are required to write more frequently exhibit better writing in English class but worse performance on writing in social studies, a finding that may be explained by the different purposes of writing in the two subjects. Social studies teachers used writing mainly as a check on reading, whereas English teachers paid more attention to the writing process.

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INTRODUCTION

Over the last two decades, researchers have arguably learned more about literacy development by studying children in settings outside school than they have by studying them in school contexts. These studies include (a) the role of bedtime stories in the emergent literacy of young children (Heath, 1980), (b) the contexts in which preschoolers explore interests in writing and reading (e.g., Bissex, 1980; Teale & Sulzby, 1986; Scollon & Scollon, 1980), (c) the role of reading in the development of text-segmentation skills (Nystrand, 1986a), (d) the traditions and messages that parents transmit to their children about the uses of print (Heath, 1983), (e) the game interactions of parents and children (Wertsch & Hickmann, 1987), and (f) the tendency of children to combine writing, drawing, and gesture (Gundlach, 1982). Dyson (1995) has insightfully showed the importance of out-of-school contexts on literacy learning in school. All these studies investigate rich contexts featuring intricate interactions between oral and written language.

Compared to such extensive research on emergent literacy, few studies have examined literacy development in school in any detail to consider, for example, the effects of classroom discourse on writing. Most research examining links between the oral and written discourse of the classroom has examined very specialized kinds of talk designed specifically for writing instruction, including response groups and other small-group work,[1] writing conferences,[2] and whole-class discussions promoting prewriting.[3] This is not to say we know nothing about the potential of classroom talk for promoting writing development. The fullest set of studies

concerns talk specifically linked to writing instruction. In his meta-analysis of such studies, for example, Hillocks (1986) found that the classroom discourse most conducive to enhancing writing skills involved peer-response groups with an "inquiry" focus: assigned topics involving analysis of readings or other "data" and attention to rhetorical strategies. The least effective instruction was lecture-based instruction involving abstract presentations focusing on grammar, mechanics, and features of good writing (Hillocks found that this kind of instruction actually had a negative effect on writing development).[4]

Overall, however, we have few examinations of the role general classroom discourse plays in writing development when the talk is not specifically about writing or primarily aimed at improving writing skills. When teachers lead open-ended discussions of reading assignments; when they have their students read aloud short stories during class; when they devote considerable time to lecturing on the important points; when students vigorously debate ideas; etc.,—what, if any, effects do these and other practices have on subsequent student writing and eventually on their writing? What are the effects of different kinds of teacher questions? What kinds of discussion enhance writing? What roles do both teachers and students play in class interactions that make a difference? How do these effects vary from classroom to classroom, and how do the most dynamic classrooms operate? General classroom discourse typically occurs without any reference to writing, and if one has impact on the other, too often we know little about it. Yet if instruction is to be optimal, teachers need to know as much as possible about all the effects of all their instruction.

Research on issues such as these requires a conceptual framework powerful enough to encompass and interrelate both oral and written discourse, and for our study, we took cues from extensive research on emergent literacy, which, as noted above, has extensively investigated links between oral and written language development by conceptualizing the essential role of the environment of literacy development. Our study seeks to understand the classroom comparably as an environment for literacy development, and for this purpose we are developing an ecological perspective on literacy learning focusing on the role of classroom discourse in shaping and sustaining this environment. This report is our first effort in this direction. To elaborate our conception of the classroom as an environment for literacy development, we first sketch some principles of an ecology of learning, and then empirically examine how the environment of

classroom discourse shapes writing in two contrasting curricular landscapes, English and social studies classes.

By conceptualizing the classroom as a dynamic and integrated system of resources for learning, an ecological perspective on language and learning assumes that development in one area often impacts or possibly inhibits development in another. This approach builds on what is known about the nature of classroom discourse and about effective writing and reading instruction respectively, but goes beyond to investigate how each mode of discourse can complement and optimize the others. Amidst education research traditions that too often treat writing, reading, and classroom discourse as discrete domains, an ecological perspective is indispensable for understanding how these different modes of discourse can interact to promote overall literacy development.

AN ECOLOGICAL PERSPECTIVE ON LANGUAGE AND LEARNING

Language and literacy researchers increasingly realize that contexts of language and literacy development are more than mere settings for development. These environments are intricate and dynamic and must continuously be generated and regenerated by the participants in their interactions with each other. They are *achieved* and *co-constructed*. For example, research on emergent literacy shows that a print-rich environment is necessary but not sufficient for the development of literacy. In addition, becoming literate requires particular interactions between the learner and a facilitator, typically a parent or older sibling. The ritual of bedtime reading enhances literacy development because it defines such a context (Heath, 1980). Writing development, too, is clearly linked to particular interactions writers have with peers and teachers. These environments are not just backdrops for learning; more to the point, in their interactions with each, the participants actively and dynamically shape each other's writing development.

These interactions set up tight interrelationships and mutual dependencies among the participants, and for this reason, we may understand their activities in ecological terms. This is not to say that there is anything particularly "natural" about classroom learning. We emphasize ecology to focus on the importance of interrelationships between teachers and students and also

among peers as a key factor in student learning. *Ecology* concerns the relation of organisms to their environments, where environment includes other organisms with whom the reference species has a "symbiotic" relationship—as in a "food chain." *Human ecology* concerns the relations of people to their environments (Hawley, 1986). *Pedagogical ecology* concerns the relationships of instructors and learners in learning environments. We treat "instructor" and "learner" quite broadly here since such learning environments often occur out of school, and some instructors are often parents, older siblings, and peers. Ecologists study these symbiotic interactions to discover insights about the course and parameters of individual organisms' behavior and development. On the one hand, ecologists study grand ecosystems. On the other hand, they study far smaller and more particular ecological niches. An ecological niche, for example, can be nothing more than the side of a highway in a desert, which, because it gets ample moisture in the form of runoff from the pavement, supports plant life that is more lush than other plants just a few yards away in the dry surrounding desert.

Ecological niches are far more idiosyncratic, dynamic, and variable than the ecosystems of which they are a part. In education, school systems are analogous to ecosystems, whereas bedtime reading rituals, response groups, and individual class contexts are more properly ecological niches. These niches are more than physical spaces. Many occur only at certain times involving particular activities and participants. Hence, if bedtime reading occurs in a particular spot, in a favorite chair or in bed, for example, this context comes alive as a niche for literacy learning only when the reader and the one-read-to curl up together with a good story at bedtime. For the rest of the day, the spot plays many other functions. Hence, each niche is defined by participants' interactions and the functions activated at the time of its use.[4] This is why it is the ritual of a parent reading to a child at bedtime, and not just the physical space occupied by reading, that constitutes the niche: The activity assigns particular roles to the participants, who through their very interactions shape and support the parameters of the learning environment. A given classroom can be the site of any number of niches, depending on who's teaching, who's learning, what the subject is, and many other considerations. In short, niches are activity settings: Bedtime stories are part-and-parcel of going-to-sleep rituals, enacted by the nurturing interactions of a parent reader and one who is read to; response groups are effective when they create contexts that enable writers to relate their composing and revising to the likely responses of their readers

(Nystrand, 1986b); and whole-class contexts shape learning as teachers enact assumptions about what counts as learning and knowledge, typically realized by the kinds of questions teachers ask their students as well as how they respond to them (Nystrand, 1997). Each of the critical interactions in these settings ecologically define niches for literacy development.

Ecological Features of Literacy Learning Environments

Ecological niches are distinguished by the reciprocal, mutually dependent roles of their particular members: What one does has implications for what the other can do. In environments dedicated to learning, the roles are also epistemological, and it is the discourse between participants that defines the operational epistemology of the group.

Reciprocal roles. Ecologically, literacy learning niches are shaped by the interactions of parents and children; teachers and students; experts and novices; etc. It is the roles of the participants that shape these interactions. These respective roles are reciprocal, which is to say, the role of one (e.g., teacher) entails the role of the other (e.g., student). Reciprocity is an important principle of any social interaction (Schutz, 1967), and the character of any semiotic space is largely defined by the roles of the conversants (hence, textual space is a function of writer-reader interaction [Nystrand, 1982, 1986c], learning space is shaped by the reciprocal roles of teacher and learner [Nystrand, 1997], etc.). The importance of reciprocal roles in an ecology of learning is evident in Bruner's (1978) concept of scaffolding. Scaffolding occurs when an adult or more able peer initially shows a learner the essential moves in a new activity, making all or most of them himself, but then, in subsequent interactions, gradually handing things over to the learner. In such a coordinating effort, the instructor "scaffolds" the learning and activity of the learner by striking a balance between what the learner can do herself while providing support for what she is not yet able to do by herself, continually honoring the expanding role, perspective, and emerging skills of the learner. The context is dynamic, evolving according to the shifting roles of the two. Their relationship is reciprocal: Development is elegantly understood here as the learner's expanding role enabled by the instructor's receding role in a joint activity; their roles can shift precisely because reciprocity remains constant (see Figure 1).

Figure 1. Reciprocity in Scaffolding:
Adult Role Recedes as Child Role Expands

Epistemological roles. Because such interactions comprise *learning* environments, the participant roles are also epistemological. Classroom discourse is the chief medium for the construction of classroom epistemology (Applebee, 1996), for in classroom interaction, student roles are largely shaped if not assigned by the roles teachers assume through questions, tests, and responses to student answers, writing, etc. For example, our previous studies have shown that discussion, which is more coherent than question-answer recitation, is also a more effective medium of learning than question-answer recitation (Nystrand, 1997). Learning is clearly promoted when teachers effectively build on students' prior knowledge and current understandings, for example, by following up on student responses. By doing so, teachers validate particular student ideas by incorporating their responses into subsequent questions, a process Collins (1982) calls "uptake." In the give and take of such talk, student responses and not just teacher questions shape the course of talk. The discourse in these classrooms is therefore less predictable because it is "negotiated" or co-constructed—in character, scope, and direction—by both teachers and students as teachers pick up on, elaborate, and question what students say (Nystrand, 1990a, 1991). Such interactions are also often characterized by "authentic" questions—questions asked to obtain valued information, not simply to see what students know and don't know; authentic questions are questions without "prespecified" answers

(Nystrand & Gamoran, 1991). Unlike recitation, in which the teacher's questions are prescripted according to points of information students must learn, discussion is more fully shaped by open-ended interaction and is more likely to be thematically organized as the conversants respond to, follow up on—in short, develop—what has been said. Epistemologically, such dialogically organized instruction treats present-tense, constructive, sometimes tentative knowing—i.e., the class's current understanding—as the foundation of past-tense knowledge (what gets remembered) and therefore learning. In this way, full-blown discussion ecologically elaborates a network of conversation turns, each utterance sequentially contingent upon both the previous and subsequent turns. It is in the context of this network that class understandings emerge.

Examining the Effects of Classroom Discourse on Writing

We may expect classroom discourse to enhance writing to the extent that writing promotes coherence by enlarging the network of conversation turns. This happens when talk motivates writing, and/or vice-versa, so that the one follows up the other. When writing and talk interact in this way, the writing carries on what began as talk, in which case the talk is prewriting, or the talk carries on what began as writing, in which case the writing may be said to focus the talk. Our preliminary study (Nystrand & Gamoran, 1996) lends support to this contention: Though lecture and question-answer exchanges have positive effects on writing, we found, episodes that involved uptake and coherence contributed even more, strongly suggesting that these exchanges have their strongest impact on writing when they are interactive and responsive to student contributions. Authentic questions, like uptake, also contribute to coherence. By asking authentic questions, teachers elicit students' ideas, opinions, and feelings, and in so doing, they make students' prior knowledge and values available as a context for processing new information. In this way, authentic questions, like writing that follows up discussion, ecologically contribute to the coherence of instruction by enlarging the network of available meanings in the class. By contrast, the coherence of instruction is likely to suffer if, as in recitation, the teachers' questions are exclusively prescripted according to what students are

supposed to learn. Skilled teachers are adept at phrasing questions with one eye on the text and the other on the class's current understanding at each and every point of the unfolding discussion.

Here's an example of talk closely interrelated with writing from a ninth-grade English class. The teacher, Ms. Lindsay, is leading a discussion of plot summaries students have written for a chapter from Mildred Taylor's *Roll of Thunder, Hear My Cry*. In the following excerpt, Ms. Lindsay is writing on the board, trying hard to keep up with John, one of her students in this ninth-grade class, who has just read aloud his plot summary.

> *"I had a lot of trouble," says Ms. Lindsay, "getting everything down [on the board], and I think I missed the part about trying to boycott." She reads from the board: "'and tries to organize a boycott.' Did I get everything down, John, that you said?"*
>
> *"What about the guy who didn't really think these kids were a pest?" replies John.*
>
> *"Yeah, okay," says Ms. Lindsay. "What's his name? Do you remember?" John shakes his head, indicating he can't remember.*
>
> *Without waiting to be called on, Alicia, another student, volunteers, "Wasn't it Turner?"*
>
> *Looking around the class, Ms. Lindsay says, "Was it Turner?" Several students say, "Yes."*
>
> *"Okay," continues Ms. Lindsay, "so Mr. Turner resisted white help. Why? Why would he want to keep shopping at that terrible store?"*
>
> *John quickly answers, "There was only one store to buy from because all the other ones were white."*
>
> *"Well," Ms. Lindsay objects, "the Wall Store was white too."*
>
> *Another student, Tom, now addressing John, wonders, "Is it Mr. Hollings' store? Is that it?"*
>
> *"No," John answers. "Here's the reason. They don't get paid till the cotton comes in. But throughout the year they still have to buy stuff—food, clothes, seed, and stuff like that. So the owner of the plantation will sign for what they buy at the store so that throughout the year they can still buy stuff on credit."*

"So," Ms. Lindsay says, reading aloud what she puts up on the board: "he has to have credit in order to buy things, and this store is the only one that will give it to him."

Another student, Felice, speaks up. "I was just going to say, it was the closest store."

Barely looking away from the board now, Ms. Lindsay replies while continuing to flesh out the paragraph building on the board, "Okay—it's the closest store; it seems to be in the middle of the area; a lot of sharecroppers who don't get paid cash—they get credit at that store—and it's very hard to get credit at other stores. So it's going to be very hard for her to organize that boycott; she needs to exist on credit."

"Yeah," she says as she then nods to yet another student. Discussion continues.

This excerpt is noteworthy because it starts with John's written summary, which the teacher writes on the board as John dictates it to her, and then uses discussion as a way of further developing John's ideas. More specifically, by scaffolding his responses with particular questions, Ms. Lindsay teaches him how *to interpret literature*. Here writing focuses talk which, in turn, further develops John's literary thinking. Presumably his written summary will develop if he revises it, for what began as a report now has the orientation and potential of an essay. The discussion has helped him articulate a focused thesis about why there was only one store to shop at. When we also consider that both writing and discussion here develop out as a reading assignment, we can see how instructional time in this class is highly effective and efficient because the writing, reading, and talk all pull together, and so work coherently and epistemologically to develop a network of understandings about the novel.

Our previous research (Gamoran & Nystrand, 1991; Nystrand et al., 1997) showed that academic achievement in both literature and social studies is enhanced when writing, reading, and classroom discourse are coherent, sustained, and focused on academic subject matter. In English instruction, we expect that literature achievement will be enhanced to the extent that writing, reading, and classroom discourse are integrated in study of a particular drama or novel. We expect that such integrated instruction will be superior to instruction that treats literature independently of writing, as when, for example, students read a novel and work on study questions three days a week, while on the other two days of the week, they work on grammar.

Integrated instruction increases its coherence, which in turn promotes learning because students are best able to digest new information when they can easily relate it to what they already know. Similarly, in social studies, we expect that writing about social studies topics will be enhanced by a coherent focus in classroom reading, writing, and talk around social studies issues.

Yet our experience and expectations lead us to believe that writing is used differently in social studies and English. Traditionally English and language arts teachers have been more concerned with writing than social studies teachers have been. With new emphasis on the importance of writing in all subjects, however, this situation may be changing, and our study sought to examine this issue. Ecologically, any given classroom context may be expected to vary depending on a set of variables, including (a) exogenous variables such socioeconomic economic status (SES), race, and ethnicity of the community and school, as well as students and teachers; (b) school variables such as school culture, (c) class variables such as tracking and ability grouping, (d) within-class discourse variables such as teacher-student dynamics, classroom interaction, and discourse style, and (e) curriculum variables such as subject. Our empirical investigation, which begins to examine these issues, specifically investigated only how curriculum shapes writing in English and social studies classes (variable e), which is to say, we sought to understand how these two subject matters respectively shaped the literacy learning niches of the classrooms we examined. Our long-term research program will examine variables a-d.

Data and Measures

To address the role of curriculum in writing development, we reanalyzed data previously collected in our studies of instruction. Because these data were collected to examine literature and social studies achievement rather than writing performance, we were limited in this study in what we could actually examine. We collected no data directly related to epistemic roles, for example. Nonetheless, our comprehensive data set accommodated many queries concerning the relationships between classroom discourse and writing performance, especially queries seeking to identify the general features of classroom talk that can be associated with writing performance.

Moreover, because we studied both English and social studies classrooms, we were able to compare and contrast the effects of these different disciplinary contexts.

Our data were collected over an entire school year from nine midwestern high schools, including three in small-town/rural locales, one large suburban school, three large urban schools (one in an upper-middle-class area and two in a working-class locale) and two urban Catholic schools whose students were mainly middle-class. In English, we gathered data from over 1100 students in 54 ninth-grade classes. In social studies, the two smallest rural schools did not have year-long ninth-grade classes, but we were able to gather data on over 1000 students in 48 classes in the other seven schools. About 90% of students who began the school year in the selected classes participated in the study, which included fall and spring testing and questionnaires for students; spring questionnaires for teachers; and four observations of each classroom. In each of the observations, the class sessions were tape recorded, and, using a specially designed computer program, CLASS 2.0 (Nystrand, 1990b), observers systematically recorded and coded all teacher and student questions and also noted the nature and topic of activities in which teachers and students were engaged.

Our database also includes qualitative information on the handouts teachers distributed in class and the long-term writing assignments they required of students. At the beginning of the year, teachers received a folder in which they were asked to collect copies of each handout they distributed. In addition, teachers had log books in which they recorded the content they covered in class, noting each week's reading selections. At the bottom of the coverage logs, teachers were asked to describe any long-term writing assignments they gave to students. For this paper, we use the handout materials and writing assignments to examine the content of students' writing tasks.

Background Measures

To study the effects of instruction, it is important to take account of pre-existing differences among students. Consequently, we obtained information about student background through student questionnaires. These data were coded as dummy variables for student race (1=black),

ethnicity (1=Hispanic), and gender (1=female). We also constructed a scale for socioeconomic status (SES), an unweighted additive composite of student reports of mother's education, father's education, the higher of mother's or father's occupation on an updated Duncan SEI scale (Stevens & Cho, 1982), and possession of home resources. Finally, our analyses also indicate whether students were enrolled in honors, regular, or remedial classes. We also have an "other class" category for a small number of school-within-school and heterogeneous classes.

Achievement Tests

We obtained data on student achievement in the fall and spring. In the fall, we administered a writing task in both English and social studies classes and separate literature and social studies achievement tests in the two different subjects. In the spring, we administered a test of literature achievement in the English classes and a test of social studies achievement in the social studies classes. The spring tests included open-ended essay questions, which we are using in this paper to measure students' writing performance in the two subject areas.

English and social studies: Test of initial writing achievement. Following the work of Nystrand, Cohen, & Dowling (1993), we defined expository writing as *sustained reflection* in which the writer records and processes information to various degrees. Basing our work on this construct, we assessed writing samples in terms of both (a) degree of reflection and (b) extent of text elaboration. We asked students to write brief personal essays, describing some experience that taught them something they valued and explaining why it was important. This sample was scored by two readers on each of two dimensions: (a) level of abstraction, based on Britton et al.'s (1975) categories of transactional-informative prose; and (b) coherence and elaborateness of argumentation, based on the 1979/1984 NAEP criteria for informative writing (in Applebee, Langer, & Mullis, 1985). The two readers' scores were averaged, and wherever there was a difference of more than one point on either measure, samples were reread by a new pair of readers. Each student's initial writing score was computed as the sum of the two measures. On the 5-point Britton scale, readers agreed within 1 point for 96.3% of the papers; on the 4-point NAEP scale, readers agreed within 1 point for 95.5% of the papers.

English: Test of initial literature achievement. Measurement of students' start-of-the-year capabilities with literature used a power test taken from the National Assessment of Educational Progress (NAEP) and involved a series of multiple-choice questions concerning a set of poems and narrative passages. In addition, students were asked to explain their response to one of the short stories, and this writing sample was scored using the National Assessment of Educational Progress' (1979) criteria for the identification and substantiation of personal emotions and feelings elicited by a short story. These samples were read by two readers and reread by a new pair of readers whenever there was a discrepancy of more than one point. There was perfect agreement among readers for 92.6% of the samples. Each student's initial literature score was computed as the average of the two readers' scores, plus the multiple-choice scores.

Social studies: Test of initial social studies achievement. In social studies, students filled out a multiple-choice test of general social studies knowledge in civics, history, and geography. Items for the test were drawn from public-release items from the National Assessment of Educational Progress (NAEP).

English: Test of writing achievement in literature. In the spring, we administered another literature test, asking questions about various aspects of works students had studied during the year. As part of this test, students wrote a brief essay requiring them to select a character they admired from one of the novels, short stories, or dramas they had read, and to both describe this character and explain their admiration for him/her. This writing sample, like the one collected in the fall, was assessed using the same rubrics for (a) degree of reflection and (b) extent of text elaboration.

Social studies: Test of writing achievement in social studies. In social studies classes, we administered a test that posed a series of questions from recall to short essays about a specific topic students had studied during the year. The topics varied depending on what had been covered in class. As part of the test, we also asked students two open-ended questions about any other topic they had studied in social studies during the year. Responses to these questions are used in this study as indicators of student writing performance in social studies. The responses were scored by two readers on three dimensions: level of abstraction, amount of information, and accuracy of information. The scores for each dimension were summed across dimensions and averaged across readers. (The interrater correlation of scores was .87.) Then the three

dimensions were compiled into a single score using a formula derived from a pilot study in which three high school social studies teachers had marked a set of similar tests. The formula gave most weight to amount of information, second to level of abstraction, and third to accuracy. The appendix provides the details of the scoring system.

Measures of instruction. Classroom observations, teacher questionnaires, and student questionnaires generated data on writing activities and classroom instruction that we use for the analyses in this paper.

Writing activities. During each class observation, we recorded all instructional activities in sequence. These data allowed us to track how often class activities involved writing, as well as what types of writing occurred, and the extent to which writing and talk were related.

In addition, our teacher survey elicited three indicators of how much writing was assigned to each student: (a) frequency of writing at least a paragraph, (b) frequency of writing more than two paragraphs, and (c) frequency of writing one page or more. All frequencies were coded in times per month. For regression analyses, we used the average of these three measures to compute the frequency of extensive writing. This scale has an alpha-reliability of .86. We also included a measure of how often students chose their own writing topic, coded in times per month, from a single question on the teacher survey.

Editing versus revising. We used student questionnaires to indicate how often students revised their written work. Students were asked, "How often do you revise or rewrite a paper for this class?" This variable was coded in times per month. For regression analyses, we created an indicator of editing by multiplying this variable by the sum of students' responses to whether, if and when they revised, they worked on spelling, punctuation, grammar, and/or usage. Thus, for example, a student who reported revising once a month, and who worked on both spelling and punctuation, would have a value of 2 on the editing scale (1 time/month x 2 editing activities=2). The scale has a minimum of 0 (for students who never worked on editing in revision) and a maximum of 80 (for students who revised daily but worked on all four areas of editing). We also created an indicator of revising by multiplying responses to the same question about frequency of revision by whether, if and when they revise, students worked on ideas and information, and on organization and development of the paper. This variable has a minimum of 0 (for students who never revised) and a maximum of 40 (for students who revised daily and worked on both types of

revision). Finally, we also asked students how often they completed their written work and coded this variable as a percentage.

Classroom discourse. Observations and teacher questionnaires both contributed to our measures of classroom discourse. From the observations, we computed the average amount of time spent in lecture, question-answer recitation, and discussion. In our study, discussion was narrowly defined as free exchange of information among students and/or between at least three students and the teacher that transcended the usual initiation-response-evaluation (IRE) sequence of classroom discourse (Mehan, 1979) and lasted longer than 30 seconds. Discussion of this sort was very rare, averaging only about half a minute per day in social studies and a quarter of a minute per day in English.

Observers also coded the questions posed by teachers on a variety of dimensions, including authenticity (whether the question avoided a pre-specified answer) and uptake (whether the question incorporated a previous student response). These variables are coded as a proportion of total teacher questions, averaged across the four observations. Observers also noted what proportion of students were visibly off-task during instruction, and these data were averaged across the observations. Finally, teacher questionnaires yielded an indicator of coherence, coded in times per week based on a scale constructed from the following questions:

> About how often do students in your class write about (or in response to) things they have read?
> About how often do you discuss writing topics with your students before asking them to write?
> About how often do you and your class discuss the readings you assign?
> When you ask students about their reading assignments in class, how frequently do you attempt to do each of the following:
>
> Ask them to relate what they have read to their other readings?
> About how often does your class relate its discussion to previous discussions you have had?
>
> About how often do you and your class discuss things students have written about?

This scale has an alpha-reliability of .68.

HYPOTHESES AND MEASURES

Our study tested the following hypotheses, which were elaborated above.

Hypothesis 1. As noted in the introduction, classroom discourse and writing seem to proceed independently of each other in high school classes. To examine this claim, we present correlations between writing and classroom discourse.

Hypothesis 2. We expected that classroom discourse would enhance writing to the extent that writing promotes coherence by enlarging the network of conversation turns, and we expected that such integrated instruction would be superior to instruction that treats literature independently of writing (e.g., reading a novel and answering questions about it in class with writing instruction on completely different topics and on different days).

Hypothesis 3. We expected these effects to be amplified by classroom discourse characterized by authentic questions and uptake, which also contribute to coherence.

To assess the impact of various dimensions of classroom discourse on student writing in literature and social studies (Hypotheses 2 and 3), we present ordinary least squares regression analyses of classroom discourse on writing for each of the two subjects. To facilitate comparisons across subjects, we have standardized the achievement tests to have a mean of 0 and a standard deviation of 1. Although the samples for the two tests are not identical, they are similar enough, with overlapping memberships, to make such comparisons reasonable. However, we have not standardized the independent variables, so the regression coefficients can be interpreted as indicating the impact of a one-unit change in the independent variable on a standard deviation in test score results. For example, the coefficient for "Gender" indicates the difference between females and males on the tests; the coefficient for "Uptake" indicates the change expected on the basis of a one percent increase in uptake (since uptake is coded in percentages); and so on.

RESULTS

First we present descriptive findings on the amount of writing, editing, revising, and classroom discourse, and the relations between writing and discourse. Then we present analytic results on the impact of classroom discourse on writing. Finally we provide a content analysis of the handouts and long-term writing assignments, to help us understand some of the subject-matter differences that emerged from the statistical analyses.

Writing and Classroom Discourse

How much writing do students do? Are there differences between English and social studies? How does writing relate to classroom discourse? Conventional wisdom suggests that students write in English classes more than in social studies, yet little is known about the relation between classroom discourse and writing in either subject. To address these issues, we present data from surveys and observations that describe the character of writing and discourse in ninth-grade English and social studies classes. Results are reported in Table 1.

Amount of writing, choice, and revision. We were surprised to find that the frequency of writing was similar in English and social studies. We expected to find more writing in English, but instead teachers in both subjects reported that students were required to write at least a paragraph a little more than once a week, and they were asked to write more than two paragraphs, as well as one page or more, about once every two weeks. In English, students could choose writing topics about every other week, but in social studies, such choice was limited to less than once a month, on average. Also, editing and revising were more common in English than in social studies. On average, students reported they revised or rewrote their papers about every other week in English, but little more than once a month in social studies. Completion of writing assignments averaged 86% in English and 83% in social studies, according to student reports. Overall, the relatively large standard deviations compared to the means indicate substantial variability from classroom to classroom in both subjects.

Table 1. Characteristics of Writing Activities and the Discourse Environment

ENGLISH (*N*=54 classes)

	Mean	Standard Deviation
Writing Activities		
Frequency (times per month)[a]		
At least a paragraph	4.52	3.04
More than 2 paragraphs	2.03	2.54
1 page or more	2.00	2.08
Choice (times per month)[a]	2.61	3.38
Completion (percentage)[b]	85.91	6.88
Rewrite (times per month)[b]	2.37	1.46
Discourse Variable		
Lecture time (minutes)[c]	8.42	5.84
Question-answer time (minutes)[c]	17.58	6.55
Discussion time (minutes)[c]	.24	.50
Authentic questions (percentage)[c]	26.57	19.19
Uptake (percentage)[c]	25.69	11.83
Coherence (times per week)[a]	12.84	6.76
Off-task (percentage)[c]	3.77	4.06

SOCIAL STUDIES (*N*=48 classes)

	Mean	Standard Deviation
Writing Activities		
Frequency (times per month)[a]		
At least a paragraph	5.06	3.47
More than 2 paragraphs	1.99	1.89
1 page or more	1.83	2.08
Choice (times per month)[a]	.81	.93
Completion (percentage)[b]	83.52	9.91
Rewrite (times per month)[b]	1.34	.85
Discourse Variable		
Lecture time (minutes)[c]	6.21	6.12
Question-answer time (minutes)[c]	23.82	8.74
Discussion time (minutes)[c]	.52	1.31
Authentic questions (percentage)[c]	30.48	20.05
Uptake (percentage)[c]	26.95	14.01
Coherence (times per week)[a]	10.82	6.63
Off-task (percentage)[c]	3.28	3.68

[a] Teacher reported

[b] Aggregated from student reports

[c] Observed

Classroom Discourse

Generally, classroom discourse was very similar in English and social studies. In both subjects, the vast majority of class time was devoted to a combination of lecture, question-and-answer recitation, and seatwork. English teachers lectured and directed seatwork a bit more, and recitation was more prominent in social studies, but the overall character of class time was very similar. Discussion was rare in both subjects. On average, discussion took less than 15 seconds a day in English, and about 30 seconds in social studies classes. In English classes, 61.1% of all classes had no discussion at all, and only 5.6% had more than a minute daily; only one class of the 54 averaged more than two minutes. Similarly in social studies, 62.5% of the classes had no discussion at all, 10.4% had more than one minute daily, and only 4.2%, or three classes, averaged more than two minutes per day.

In English classrooms, authentic questions were asked in all the ninth-grade classes we observed; half the classes routinely had 25% or more. In social studies, one class exhibited no authentic teacher questions and, as in English, half the classes averaged 25% or more. The average for authentic questions was about 27% in English and 30% in social studies. We also observed that 26% of teacher questions in English and 27% in social studies exhibited uptake. Coherence, characterized by writing about reading selections, talking about writing, talking about readings, and so on, occurred about 13 times per week in English and 11 times per week in social studies, according to teacher reports. Again, the standard deviations are large compared to the means, indicating that classes differ substantially from one another in both subjects.

Classroom Writing

Writing is a rare event in the classrooms we studied, with none occurring in over half the lessons we observed; social studies classes used writing slightly more than English (57.6% of observed lessons vs. 53.7%). When writing did occur independently from talk, it most commonly involved seatwork (10.2%). Short writing tasks were discussed in only .7% of the

Table 2. Classroom Uses of Writing in 431 Grade 9 English and Social Studies Lessons

	SOCIAL STUDIES		ENGLISH		TOTAL	
	All Lessons	Lessons w/ Writing	All Lessons	Lessons w/ Writing	All Classes	Lessons w/ Writing
LESSONS WITH NO PLANNED WRITING TASKS	57.6%	----	53.7%	----	55.5%	----
TALK ABOUT WRITING						
Grammar lessons	0.0%	0.0%	2.5%	5.6%	1.4%	3.1%
Writing lessons	0.0%	0.0%	0.9%	1.9%	0.5%	1.0%
WRITING WITHOUT TALK						
Extended writing in class, but not discussed	1.5%	3.6%	6.4%	13.8%	4.2%	9.3%
Clerical work (copying down assignments & taking notes)	4.0%	9.5%	3.4%	7.4%	3.7%	8.4%
Tests or quizzes* undiscussed in class	8.0%	19.4%	8.6%	18.5%	8.4%	18.8%
Seatwork with no discussion	9.0%	21.4%	11.2%	24.1%	10.2%	22.9%
TALK AND WRITING AS EXTENSIONS OF EACH OTHER						
Recitation as extension of short writing task (homework, seatwork, tests, & quizzes)	19.2%	45.2%	16.7%	36.1%	10.9%	24.5%
Recitation as extension of longer writing task (e.g., essays)	2.5%	5.9%	3.4%	7.4%	3.0%	6.8%
Discussion interwoven with short writing task	0.0%	0.0%	1.3%	2.8%	0.7%	1.6%
Discussion interwoven with longer writing task	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Individual seatwork	12.1%	28.6%	15.5%	33.3%	13.9%	31.3%
Collaborative seatwork	6.1%	14.3%	5.6%	12.0%	5.8%	13.0%
Small group work	9.1%	21.4%	9.0%	19.4%	9.0%	20.3%
	n=198	n=84	n=233	n=108	n=431	n=192

* Tests and quizzes were undercounted in our study because we sought to avoid observing classes when they were scheduled.

lessons we observed, and in none of the lessons was discussion interwoven with longer writing tasks (e.g., essays). These results are summarized in Table 2.

For the most part, these general descriptions of writing and discourse conform to expectations. The only unexpected finding, that the amount of writing is similar in English and social studies, simply indicates that, on average, students do not write very much in either subject. Classroom discourse is dominated by teachers; most questions have prespecified answers and do not build on students' ideas; and question-answer sessions rarely become the kind of free-flowing exchanges of information that we have called discussion. Is there a pattern here? The next question is to ask whether writing activities and classroom discourse are related to one another.

Relations between Classroom Discourse and Writing

As noted above, classroom discourse and writing typically seem to proceed independently of each other in most high school instruction. Table 3 presents correlations between five indicators of writing activities (frequency, choice, completion, editing, and revision) and seven aspects of classroom discourse (lecture, question-answer, discussion, authenticity, uptake, coherence, and off-task behavior). The correlations indicate that the two aspects of classroom life have little to do with each other. Of seventy correlations reported in Table 3, only six are statistically significant at the .05 level—more than expected by chance, but few enough to refute any clear relationship between classroom discourse and writing activities. The only possible pattern that appears in the correlations is that social studies classes devoting more time to discussion also require more writing, allow more student choice, and foster more substantive revision of student work. This pattern may be evidence of a more open, interactive, and inquiry oriented type of classroom, but the rarity of discussion should caution us not to over interpret the finding. The pattern does not appear in English, where there is no discernable pattern at all. The social studies data also hint at the possibility that rates of completing student work are higher in more coherent classes, i.e., where reading, writing, and talk are more frequently integrated, and where teacher

questions build on student responses. However, only the correlation with uptake is statistically significant. Overall, the picture is one of disconnection between writing and discourse.

Table 3. Correlations between Writing Activities and the Discourse Environment

Discourse Variable	Frequency[a]	Choice[a]	Completion[b]	Editing[b]	Revision[b]
English (n=54 classes)					
Lecture time[c]	-.07	-.01	.16	-.13	-.11
Question-answer time[c]	-.27*	-.22	.17	-.09	-.06
Discussion time[c]	.14	.17	.09	-.06	-.14
Authentic questions[c]	-.06	.11	-.33*	.02	.02
Uptake[c]	.16	.01	-.05	.14	.03
Coherence[a]	-.03	-.04	-.13	-.01	-.04
Off-task[c]	-.06	.26	-.27	.07	-.04
Social Studies (n=48 classes)					
Lecture time[c]	-.03	.03	.00	-.11	-.19
Question-answer time[c]	-.18	-.09	-.03	-.04	.02
Discussion time[c]	.41*	.67*	.08	.26	.47*
Authentic questions[c]	.00	-.02	-.09	-.18	-.07
Uptake[c]	.19	.15	.36*	-.13	-.03
Coherence[a]	.30	-.25	.24	.03	.16
Off-task[c]	-.07	-.35*	-.21	-.02	-.15

[a] Teacher reported
[b] Aggregated from student reports
[c] Observed
* $p<.05$

Effects of Classroom Discourse on Writing

The core of our analysis examines the relationship between features of classroom discourse and writing achievement. Does coherent, engaging classroom discourse enhance students' writing? Table 4 presents the results of regression analyses in which we examine the extent to which variation in student background, the amount and character of assigned writing and reading tasks, and features of classroom discourse influence student performance on the spring writing sample for English and social studies (our dependent variables). The regressions were

carried out at the student level, with class-level variables assigned to the appropriate students. Two models were estimated: (1) a reduced model with student background characteristics such as race, gender, SES, prior achievement, and track assignment, and (2) a full model with background characteristics plus features of writing tasks and classroom discourse.

Because our model takes into account conditions at the beginning of the school year, such as social background and prior writing skills, and examines the relations between instruction that occurs during the year and writing at the end of the year, we view our analysis as describing a causal process. Of course, one can never completely rule out the possibility that unmeasured conditions, rather than the instruction we assessed, contributed to the results. Consequently, conclusions about causality must be treated with caution.

Background effects. The results of the analysis are displayed in Table 4. In the first column for each subject, spring writing is regressed on student background variables. The results are largely similar across subjects: Girls scored higher than boys (their advantage is greater in English), blacks and Hispanics scored lower than whites (the Hispanic deficit is significant only in social studies), and students with higher scores on the fall tests achieved at a higher level in the spring. One difference across subjects is that students with higher SES backgrounds scored higher in English but not in social studies.[6]

Instructional effects. The second columns listed for each subject include the background variables and add indicators of classroom instruction, including writing activities and classroom discourse. How do discourse and writing activities affect students' writing skill? Although classroom discourse and writing activities proceed independently, classroom discourse clearly influences students' writing performance. The second and fourth columns of Table 4 show that in both subjects, writing performance was higher in classes in which more time was spent in oral activities; in which fewer students were off-task; and in which teacher questions involved more uptake. Coherence—the extent to which writing related to reading, reading to talk, and talk to writing—significantly affected writing performance in both social studies and English. Discussion time had no significant effects, probably because it was so rare. Following our earlier analyses of literature achievement, our model allows the effects of authentic questions to differ across honors, regular, remedial, and other classes. In English, we find, as in our previous work, a positive coefficient for honors classes (the coefficient falls just short of significance at the .05

Table 4. Effects of Classroom Discourse on Writing[a]

	English		Social Studies	
	Background	Instruction	Background	Instruction
Gender (Female =1)	.222**	.231**	.146**	.120*
	(.059)	(.057)	(.056)	(.054)
Race (Black=1)	-.274*	-.092	-.249**	-.099
	(.112)	(.109)	(.094)	(.091)
Ethnicity (Hispanic=1)	-.184	.001	-.278**	-.155
	(.103)	(.102)	(.105)	(.100)
SES	.147**	.086*	.048	.021
	(.040)	(.040)	(.037)	(.037)
Fall writing	.063*	.045	.112**	.105**
	(.025)	(.024)	(.022)	(.021)
Fall subject test[b]	.032**	.020**	.025**	.023**
	(.006)	(.006)	(.003)	(.003)
Honors class	.302**	-.094	.384**	.154
	(.077)	(.168)	(.078)	(.160)
Remedial class	-.334**	.110	-.333**	-.240
	(.104)	(.179)	(.104)	(.232)
Other class[c]	-.241*	.123	.391**	.746**
	(.102)	(.193)	(.078)	(.222)
Writing Activities				
Frequency		.094**		-.091**
		(.021)		(.022)
Choice		-.079**		.064
		(.016)		(.047)
Completion		.006**		.004**
		(.001)		(.001)
Editing		-.013**		.002
		(.004)		(.006)
Revising		.021*		.002
		(.009)		(.013)

Table 4. Effects of Classroom Discourse on Writing[a] (continued)

	English		Social Studies	
	Background	Instruction	Background	Instruction
Classroom Discourse				
Lecture		.010		.026**
		(.005)		(.007)
Question-answer		.017**		.021**
		(.005)		(.004)
Discussion		-.052		.022
		(.064)		(.050)
Authentic Questions				
Honors classes		.009		.004
		(.005)		(.004)
Regular classes		-.003		-.011
		(.002)		(.002)
Remedial classes		-.017**		-.006
		(.005)		(.008)
Other classes		-.021**		-.005
		(.004)		(.007)
Uptake		.011**		.006
		(.003)		(.003)
Coherence		.022**		.039**
		(.005)		(.008)
Off-task		-.023*		-.029**
		(.009)		(.010)
Adjusted R^2	.219	.298	.338	.415

[a] Dependent variable is subject-specific writing. N=979 students in English and 894 students in social studies.

[b] English: Reading power test. Social Studies: Social studies general knowledge test.

[c] "Other Class" includes school-within-school and heterogeneous classes.

* $p<.05$

** $p<.01$

level) and significant negative effects in remedial and other classes (Gamoran & Nystrand, 1992). This pattern seemed to reflect different uses of authentic questions: in honors classes, authentic questions typically focused on the literature students were reading, which was the subject of our spring writing assessment. In remedial classes, teachers rarely asked authentic questions about literature: They mainly asked test questions about literature focused on plot summaries, and the authentic questions they did ask seemed mainly used to engage students' attention, not to focus

thinking about literature. Not surprisingly, then, authentic questions in remedial classes actually detracted from writing about literature (see further Gamoran & Nystrand, 1992). In social studies classes the coefficients for authentic questions also differ in sign across class types, but the coefficients are close to zero and nonsignificant.

How large are the observed differences? They range from modest to substantial. Evaluated in a causal framework, an increase of 10% in the percent of questions with uptake would result in a rise in writing performance of just over a tenth of a standard deviation in English (10 x .011 = .11) and about half that impact in social studies. A teacher who increased coherence from 13 to 20 times per week (an increase of about one standard deviation) would expect to see better writing by about .14 standard deviations in English (7 x .022 = .144) and twice that much in social studies. In a chaotic classroom—for example, one in which off-task behavior rose by 10%—one would expect to see a drop in writing performance by approximately a quarter of a standard deviation in both subjects. In light of the limited time span covered by the analysis (one school year), differences of 10% of a standard deviation or more should be regarded as meaningful.

It is worth noting that the coefficients for several background variables, particularly the demographic and class type categories, are substantially diminished in the second and fourth columns compared to the first and third columns respectively. This pattern indicates that effects of background variables are mediated in part by instructional differences. For example, when only background conditions are controlled, blacks appear to score more than a quarter of a standard deviation behind whites in both subject areas (recall that the dependent variable is standardized). When instruction is included in the models, however, the deficits for blacks are less than a tenth of a standard deviation and not statistically significant in either subject. According to these results, if blacks and whites experienced the same instruction, their writing achievements would be much more similar. Similarly, both the advantages of honors classes and the disadvantages of remedial classes are at least partly attributable to differential instruction across classes.

Effects of discourse are generally similar across subjects, but effects of writing activities differ.[7] Perhaps the most striking contrast across the subject areas is that the frequency of writing exerts a positive impact on writing in English, but a negative effect in social studies. At the same

time, student choice of writing topics exhibits a significant negative coefficient in English, but not in social studies. These contrasts warrant further exploration, which we carry out below with a content analysis of writing assignments. In both subjects, students who reported that they complete more of their writing tended to score higher on the spring writing task. In English, substantive revision tends to enhance writing development while editing for grammar, spelling, punctuation, and usage retards it; these effects do not appear in social studies, where both editing and revision were perhaps too infrequent to matter for students' writing development.

Content Analysis of Social Studies and English Writing Assignments

One of our more puzzling findings was that some variables had positive effects in English and negative effects in social studies while others had negative effects in English and no impact in social studies. In order to understand some of these inconsistencies, we contrasted the respective instructional landscapes of the two subjects by closely examining the content of the course materials and long-term writing assignments in the classrooms we observed. We discovered that writing serves quite different purposes in English and social studies, even though in some superficial ways, e.g., frequency, it was similar in both subjects.

Writing in Social Studies: A Way of Teaching Reading

A content analysis of the course materials of the classrooms studied revealed that the nature of the writing tasks in social studies and English fundamentally differed. In social studies, writing was used mainly to teach reading for information. The overwhelming majority of social studies writing assignments (short answer questions and short essays) required recapitulating and reporting to the teacher facts learned in class or found in a textbook. When social studies teachers were asked about the extent to which they emphasized facts relative to the implications of facts, most teachers said they tried to split their time evenly between the two tasks. However, this pattern was not evident in the vast majority of writing assignments that students had to complete.

We did encounter a handful of social studies teachers whose writing assignments were based on authentic questions requiring students to use analytical skills to argue for or against a position, and justify their position with evidence, e.g., "Consider the consequences of Congress having the final authority to impeach the president, and argue whether or not Congress should have that power;" "Consider whether third parties are a constructive mechanism for engendering political change, and support your position with evidence;" and "If you were a current-day muckraker, what would you write about?" These questions all went beyond simple recall and challenged students to take and defend positions in writing.

Nonetheless, these teachers were the exception, and very few social studies teachers encouraged students to use critical thinking skills to build persuasive arguments in essay form. Rather, their questions typically required no critical thinking skills whatsoever. Some teachers required students to write short answers in response to a reading passage that they provided. Again, these assignments emphasized recall rather than critical thinking.

As the descriptive statistics in Table 3 indicate, revision was relatively rare in social studies classes. The content analysis revealed that when students were asked to rework their writing, the work mainly involved editing for spelling, punctuation, and grammar; it rarely involved revising the substantive content of their essays. Not surprisingly, these teachers devoted little attention to students' writing processes, though on rare occasions some instructors did stipulate certain text elements for adequate response—"Your answer must be at least three paragraphs," "Your answer must include an introduction and a conclusion," etc. It not surprising that students who did more of this type of writing—reporting their reading—actually did worse than students who wrote less: The more time students spent doing this type of writing, the less time was left over to do activities that actually improved writing achievement.

Writing assignments in social studies that gave students some choice were among the most demanding, and had positive effects on writing. When students were given a choice about what to write about in social studies, their choices were relatively limited, and they were forced to write on substantive topics. The topics tended to be serious issues that forced students to go beyond personal experience and required use of evidence to support claims. These writing assignments almost always posed authentic rather than test questions. Here is an example:

Social Studies Essay Exam

The following topics are statements regarding some aspect of the Middle East. For your essay you must agree or disagree with the topic statement. An essay in good form will state your position on the topic, support this position in the body of the essay and conclude with a summary paragraph. All work should be presented neatly, be written in ink or typed, be spelled correctly and written in complete sentences. You will be graded on how well you support your opinion, not on the opinion you hold. Good support would show that you have read the class readings or other supplementary material and must be expressed in your own words. Each essay should be 2-3 pages long.

Choose one of the following:

The relationship between the Bedouin and the villagers established a successful Middle East economy.
The Palestinian question could be resolved with a plan of coexistence within the state of Israel.
Presence of the superpowers has stabilized the situation in the Middle East.
What American policy in the Middle East should be (consider the need for oil, Soviet involvement, need for development of nationalization in the Middle East).
What it will take for Israel to become a safe home for the Jewish people.

Writing assignments like this clearly challenge students to think, and they pose substantive writing tasks.[8] This is the most plausible explanation for why "choice" had a positive effect on writing in social studies classes.

Writing in English: More Attention to Writing as Writing

As in social studies, most writing assignments in English entailed cursory attention to the surface features of writing, with no real insight into the writing process. For example, students were often asked to write an essay that included certain elements such as an introductory paragraph with a thesis statement, three paragraphs that included supporting evidence for the thesis, and finally a concluding paragraph. Nonetheless, for the most part, English teachers paid attention to writing as writing, not just as a source of information as in social studies classes. English teachers typically provided a template that students were required to follow when writing. In the interviews with teachers, teachers commonly referred to this type of writing as "decent" or indicative of a "well-constructed essay." As for the substance of these essays, they typically involved analysis some of the basic elements of a novel or short story. This was a reflection of the general goals that teachers reported holding for their English classes: to teach students to "understand" and "appreciate" literature.

A few teachers went deeper than merely providing a template for students to follow when writing. These teachers actually gave students insights into the structure of exposition, including attention to the form and organization of exposition. As for the substance of the writing, these teachers also expected students to analyze the texts they were reading more closely. Students were often asked to pay attention to how texts worked, as well as the style and organization of the writing when analyzing texts. Overall, the attention to the writing process in English classrooms addresses the issue of why students who did more writing were better writers.

Most English teachers required students to revise their writing, but as in social studies, the majority of these revisions entailed spelling, punctuation, and grammar. While teachers reported in interviews that they were not overly concerned with these aspects of writing, they were the most common types of revisions. There were only a few teachers who required more substantive revisions that focused on the organizational and aesthetic qualities of the essay. One teacher required students to read each others' work and make comments on their classmates' papers. Students in this class were urged to make substantive comments regarding the form and organizational aspects of writing. Since attention to revision was much more common and

substantive in English classes than in social studies, it is not surprising that it has positive effect in English but no effect in social studies.

A number of classes used writing assignments in ways that were similar to the typical social studies writing assignment: the main focus was on recalling information (about literature rather than historical events), and little attention was paid to the stylistic or rhetorical (e.g., how to organize an essay) aspects of writing. Overall, creative writing (i.e., fiction writing or writing about personal experiences) was rare. Nonetheless, in English, there was substantial variety in the nature of the writing assignments in the observed classrooms, and when students could exercise choice in topics in English, their choices were often more open than in social studies. One type of task offering students choice of topic posed an authentic question and was substantive in nature, for example, "How is *Great Expectations* a series of lessons learned the hard way?"[9] In other assignments, students were asked to pick a social problem (e.g., an ecological problem), do research on it, and write a short story about it. Some choice assignments posed miscellaneous creative prompts, such as "Create a story of explanation for a plant, an invention" or "Create a diary of 'A week in a life of . . .,'" etc. The third type of choice assignment centered on some type of personal introspection. For example, students wrote an essay on three of their own personal characteristics. Other topics included "How I changed and what I learned" and an experience from the previous day. In short, there was more variety in the "choice" assignments in English, and the assignments tended to be less rigorous and substantive than the more issues-based topics in social studies. This may explain why, on our assessments of writing, choice of topics worked against students in English but helped students in social studies.

CONCLUSION

To sum up, our study found a clear, though hardly simple relationship between classroom discourse and writing. Overall, even though writing activities and discourse practices are not closely linked, certain aspects of classroom discourse tend to enhance writing. For example, class talk, particularly when characterized by uptake, promoted students' writing performance. Coherence among writing, reading, and talk also improved writing. Another key here was the

student's own contribution: Controlling for writing skills and other background conditions at the beginning of the year, our analyses found that students who complete their written work, as well as classes where fewer students are off task, exhibit better writing at the end of the year.

Nonetheless, we found some surprising and initially puzzling differences in the effects of classroom discourse on writing in the two subjects. Though students wrote as often in English as in social studies, as reported above, frequency of writing enhanced writing in English, but had the opposite effect in social studies. Similarly, though students chose writing topics twice as frequently in English as in social studies, such choice was a liability in English but an asset in social studies. We came to understand these differences only when we looked closely at writing practices in the two subjects. Then we discovered fundamental differences in the purposes of and emphases on writing. In its emphasis on rhetoric and form, English classes displayed more attention to writing as writing. In social studies, by contrast, writing was used almost exclusively to teach students methods of close reading, with little more than cursory emphasis on writing, limited almost entirely to copy-editing. Though choice of topics was more open in English, editing and revising were more than twice as common in English than in social studies. Such differences clearly show that, even though students write about as frequently in both English and social studies, the curricular landscapes of the two subjects are very different insofar as writing is involved. This study raises cautions for writing across the curriculum reforms. Though such efforts have usefully heightened the collective consciousness of teachers in all corners of the school about the importance of writing in as many subjects as possible, proponents often assume writing is categorically valuable. Yet, as the findings of this study show, clearly, writing is not writing is not writing. As far as writing development goes, the two curriculum areas we examined defined quite different niches of literacy development.

Niches, not just contexts. Indeed, context is far too lame a term to explain our results. Insofar as writing plays out differently depending on the interaction of teacher and students in different classroom settings, it is important to understand that these contexts are variable and dynamic—constantly changing and changed by the interactions of the conversants. In the classrooms we studied, we were dealing not simply with the effects of more or less classroom discourse on writing, more or less authentic questions, etc., but more accurately different *ecologies of learning* constituted by classroom interactions and activities, especially as these

enacted classroom epistemologies. Further studies will need to clarify these important and complicated relationships. Such work should help teachers create a rich language environment and conduct classroom discourse that is conducive to learning.

ENDNOTES

1. For example, in studies of 250 students in 13 classes of freshman composition at the University of Wisconsin-Madison, Nystrand (1986b) found substantial benefits for students writing mainly for each other in small groups as compared to students who wrote only for the teacher and spent no time in groups. College freshmen regularly discussing their papers with peers wrote better and improved their writing ability more over the course of a semester than their counterparts who wrote only for the teacher. The peer-group students' progress was due mainly to the development of superior revising skills. One reason for this was that these students simply did more revising: On average they revised each paper about three times. In addition, as they presented their papers orally to their groups, they developed proofreading skills and typically marked up their papers even before starting group discussion. In a separate study, Nystrand & Brandt (1989) demonstrated the clear effect of group discussion on revision strategies. (For review of research on peer response groups, see DiPardo & Freedman [1988]).

2. Many studies have been made of teacher-student interaction in writing conferences; Sperling (1996) points out that little progress has been made in explicitly relating such talk to actual writing development.

3. A recent study of prewriting which shows just how rich investigations linking classroom discourse and writing can be is Sperling's (1995) study examining a single secondary lesson in great detail, provocatively tracing the clear influence of classroom talk on student writing, even involving the talk of some students who chose to do no writing. Sperling's close analysis carefully demonstrates the power of analyzing the ideas and content of individual student papers as dialogic responses to the comments and ideas of classmates during classroom interaction.

4. Similarly, Sweigart (1991) found that student-led small-group discussions of nonfiction were superior to both lecture and whole-class discussions in preparing students to write analytic opinion essays, which were scored for clear thesis and elaboration of ideas.

Langer and Applebee (1987) document features of classroom interaction that promote literate thinking and writing about literature: ownership, appropriateness, support, collaboration, and internalization. Their work since has emphasized how the development of writing is intricately related to the underlying philosophy of instruction as enacted through the discussion of literature and other instructional activities (see Langer, 1995; Applebee, 1996).

5. Most physical features of any given space are remarkably trivial, unrelated to the significance and interpretation of activities taking place within the space. The only features that count are the ones elicited and used by the participants in their roles related to the activities and interactions with one another.

6. In both subjects, students in honors classes achieved higher marks and those in remedial classes, lower marks than their counterparts in regular classes, the omitted category. However, students in "other" classes exhibited lower scores in English and higher in social studies. This finding is due to the idiosyncratic nature of our "other" category and should not be interpreted as a finding about heterogeneous versus homogeneous grouping. In English, the "other" category included a school-within-a-school in an urban environment, plus a small rural school. In social studies, the "other" category included the same school-within-a-school as well as a Catholic school. The contrast between the Catholic school and the rural school very likely accounts for the differing results for the "other" category across subjects.

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7. Statistical tests indicate that none of the coefficients for discourse variables differ significantly across subjects, but the coefficients for frequency of writing and choice of writing are significantly different in English and social studies.

8. Our end-of-the-year measure of writing in social studies offered similar choices. Students wrote two separate essays. In the first, they wrote about an important person (their choice). They then explained as specifically as they could (a) who this person was, (b) what they knew about this person's life, and (c) why the things this person did and/or said were important. In the second essay, students wrote about an important election, discovery, invention, war, or labor strike (their choice). They were asked to explain as specifically as they could (a) what the event was, (b) whom it affected, and (c) how it affected them.

9. Our end-of-the-year measure of writing in English was similar to this: Students wrote a brief essay requiring them to select a character they admired from one of the novels, short stories, or dramas they had read, and to both describe this character and explain their admiration for him/her (see above).

APPENDIX

Analysis of Social Studies Test
and the Effects of Discourse Practices on Achievement in Social Studies

The social studies test, like the project's literature test, is designed to be sensitive to what students have actually studied in class yet be sufficiently general as to be useful in any 8th or 9th grade social studies class. To accomplish this purpose, students are asked a general question which, in order to answer satisfactorily, they must use particular information they have learned from their class studies. They are asked, for example, to explain the causes of a war they have studied or to explain the importance of some person they have studied. Students write essays of 100-150 words on each of two such questions.

In all, students in the pilot study wrote 385 such essays. These essays were read by three local-area high school teachers, who rated them on a scale of 1 (for high) to 4 (for low), with instructions to give no fewer than 60 papers ratings in each category. They were asked to use their own intuitions about the worth of each paper, and, after they had read them all, to define in writing the criteria they had used to sort the papers.

Independently of the teachers, the papers were read by two graduate students who, working with the principal investigator, scored the papers for three factors: amount of information, level of abstraction, and accuracy of information. *Amount of information* was gauged according to criteria used by NAEP in the assessment of student abilities in reading and literature. This assessment counts the number of reasons or pieces of evidence students offer in their written explications and analyses. *Level of abstraction* was judged according to Britton et al.'s (1975) criteria for characterizing language function in transactional informative (i.e., expository) prose. In general terms, this scale determines if the writer is operating at one of the following levels: record (of an ongoing event), report, generalization (including a specific thesis statement stating the general import or principle regarding the writer's topic), or speculation (generalizations about generalizations, e.g., implications for the future of the lessons the writer draws from past events). *Accuracy* was determined first by counting the number of inaccurate or irrelevant pieces of information included in student essays, and then determining the proportion of information in

each essay that was accurate or satisfactory. TABLE A shows the reliabilities of these various ratings.

TABLE A. Reliability of Ratings

	ESSAY 1	ESSAY 2
TEACHERS' RATINGS:	.633	.745
LEVEL OF ABSTRACTION:	.652	.585
AMOUNT OF INFORMATION:	.714	.744
ACCURACY OF INFORMATION:	.519	.347

Analysis of the teachers' ratings of the essays revealed the following. First, correlation of the teachers' ratings with the schools' ability ratings used in determining high- and low-ability classes is a respectable .446. Second, teachers' ratings, level of abstraction, amount of information, and accuracy of information are clearly related to one another (see TABLE B).

TABLE B. Pearson Correlation Matrix Showing Relationship between Teachers' Ratings, Amount of Information, Level of Abstraction, and Accuracy of Information in Social Studies Essays.

	Tchr ratings	Abstraction	Information	Accuracy
Teacher ratings	1.000			
Abstraction	0.490	1.000		
Information	0.646	0.422	1.000	
Accuracy	0.300	0.164	0.235	1.000

A multiple regression clarifies these relationship by showing the effects of ABSTRACTION, INFORMATION, and ACCURACY in terms of TEACHER RATINGS. This analysis yields a multiple r of .691 and shows that, for the teachers, INFORMATION is the most important factor, followed by ABSTRACTION and ACCURACY in that order. TABLE C shows the results of this analysis.

TABLE C. Multiple Regression Examining Relationship of Level of Abstraction, Amount of Information, and Accuracy of Information to Teachers' Rating of Social Studies Essays

DEPENDENT VARIABLE: TEACHERS' RATINGS N: 158
MULTIPLE R: .691 SQUARED MULTIPLE R: .478
ADJUSTED SQUARED MULTIPLE R: .467
STANDARD ERROR OF ESTIMATE: 0.993

Variable	Coefficient	Standard Error	Standard Coefficient	Tolerance	*t*	*p* (2 tail)
CONSTANT	-0.161	0.657	0.000	1.000	-0.244	0.807
ABSTRACT	0.218	0.060	0.225	.885	3.629	0.000
INFORMATION	0.266	0.032	0.532	.856	8.449	0.000
ACCURACY	0.779	0.337	0.139	.933	2.308	0.022

ANALYSIS OF VARIANCE

Source	Sum-of-squares	df	Mean-square	F-ratio	*p*
REGRESSION	138.869	3	46.290	46.921	0.000
RESIDUAL	151.928	154	0.987		

Correlation of results on the social studies test with teachers' estimates of discourse practices are summarized in TABLE D. The correlations in this table should be read as indicating the strength of the relationship between the items related (0=no relationship; 1.00=complete relationship). From these values, we gain some insight into the relative associations between particular discourse practices and achievement in the social studies classes in our study.

TABLE D. Relationship of Selected Discourse Practices on Achievement in Social Studies

	Teacher Ratings	Abstract	Information	Accuracy
Frequency of writing			.464	.471
Quantity of writing	.209		.288	.311
Completion of writing tasks	.330			
Extent to which students choose their own writing topics	.418	.212		
Level of teacher response to student writing	.424	.202	.370	.395
Coherence: Extent to which writing tasks relate to discussion, reading, and other writing	.224		.370	.327
Frequency of reading assignments	.243			
Quantity of reading	.243			
Extent to which students choose own readings	.454	.217	.226	.252
Level of participation in class discussion	.229		.288	.319
Extent to which teacher asks authentic questions in discussion	.305	.205	.265	.267
Extent to which discussion touches on class readings, student essays, and previous discussion			.288	.296

WORKS CITED

Applebee, A. N., Langer, J. A. & Mullis, I. V. S. (1985). *Writing: Trends across the decade, 1974-84* (Report No. 15-W-01). Princeton, NJ: Educational Testing Service.

Applebee, A. N. (1996). *Curriculum as conversation: Transforming traditions of teaching and learning*. Chicago: University of Chicago Press.

Bissex, G. (1980). *Gnys at wrk: A child learns to write and read*. Cambridge, MA: Harvard University Press.

Britton, J. (1969). Talking to learn. In D. Barnes, J. Britton & H. Rosen (Eds.), *Language, the learner, and the school* (pp. 79-115). Harmondsworth: Penguin.

Britton, J., Burgess, T., Martin, N., McLeod, A., & Rosen, H. (1975). *The development of writing abilities: 11-18*. London: Macmillan.

Bruner, J. (1978). The role of dialogue in language acquisition. In A. Sinclair et al. (Eds.), *The child's conception of language*. New York: Springer-Verlag.

Collins, J. (1982). Discourse style, classroom interaction and differential treatment. *Journal of Reading Behavior, 14*, 429-437.

DiPardo, A. & Freedman, S. (1988). Peer response groups in the writing classroom: Theoretic foundations and new directions. *Review of Educational Research, 58*, 119-149.

Dyson, A. (1993). *The social worlds of children learning to write in an urban primary school*. New York: Teachers College Press.

Dyson, A. (1995). Writing children: Reinventing the development of childhood literacy. *Written Communication, 12*, 4-46.

Dyson, A. (1997). *Writing superheroes: Contemporary childhood, popular culture, and classroom literacy*. New York: Teachers College Press.

Gamoran, A. & Nystrand, M. (1991). Background and instructional effects on achievement in eighth-grade English and social studies. *Journal of Research on Adolescence, 1*, 277-300.

Gamoran, A. & Nystrand, M. (1992). Taking students seriously. In F. Newmann (Ed.), *Student engagement and achievement in American secondary schools*. New York: Teachers College Press.

Gundlach, R. (1982). Children as writers. In M. Nystrand (Ed.), *What writers know: The language, process, and structure of written discourse* (pp. 129-147). New York: Academic Press.

Hawley, A. (1986). *Human ecology: A theoretical essay*. Chicago: The University of Chicago Press.

Heath, S. B. (1980, November). *What no bedtime story means: Narrative skills at home and school*. Paper prepared for the Terman Conference, Stanford University, Stanford, CA.

Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms*. New York: Cambridge University Press.

Hillocks, G., Jr. (1986). *Research on written communication: New directions for teaching*. Urbana, IL: National Conference on Research in English.

Langer, J. A. (1995). *Envisioning literature*. New York: Teachers College Press.

Langer, J. A. & Applebee, A. N. (1987). *How writing shapes thinking: A study of teaching and learning* (Research Report No. 22). Urbana, IL: National Council of Teachers of English.

Mehan, H. (1979). *Learning lessons*. Cambridge, MA: Harvard University Press.

National Assessment of Educational Progress. (1979). *Reading/literature released exercise set, 1979-80 assessment*. No. 11-RL-25. Princeton: Educational Testing Service.

Nystrand, M. (1982). The structure of textual space. In M. Nystrand (Ed.), *What Writers Know: The Language, Process, and Structure of Written Discourse* (pp. 75-86). New York and London: Academic Press.

Nystrand, M. (1986a). Where do the spaces go? The development of word segmentation in the Bissex texts. In M. Nystrand, *The Structure of Written Communication: Studies in Reciprocity between Writers and Readers* (pp. 159-178). Orlando and London: Academic Press.

Nystrand, M. (1986b). Learning to write by talking about writing: A summary of research on intensive peer review at the University of Wisconsin-Madison. In M. Nystrand, *The Structure of Written Communication: Studies in Reciprocity between Writers and Readers* (pp. 179-212). Orlando and London: Academic Press.

Nystrand, M. (1986c). *The Structure of Written Communication: Studies in Reciprocity between Writers and Readers*. Orlando and London: Academic Press.

Nystrand, M. (1990a). Sharing words: The effects of readers on developing writers. *Written Communication, 7*, 3-24.

Nystrand, M. (1990). *CLASS 2.0 user's manual: A laptop-computer system for the in-class analysis of classroom discourse*. With Craig Weinhold. Madison: Wisconsin Center for Education Research.

Nystrand, M. (1991). *On the negotiation of understanding between students and teachers: Towards a social-interactionist model of school learning*. Paper presented at the 1991 Convention of the American Educational Research Association. Madison: The Center on School Organization and Restructuring.

Nystrand, M. (1997). *Opening dialogue: Understanding the dynamics of language and learning in the English classroom.* With Adam Gamoran, Robert Kachur, and Catherine Prendergast. New York: Teachers College Press.

Nystrand, M. & Brandt, D. (1989). Response to writing as a context for learning to write. In C. Anson (Ed.), *Writing and response: Theory, practice, and research.* Urbana, IL: National Council of Teachers of English.

Nystrand, M. & Gamoran, A. (1991). Instructional discourse, student engagement, and literature achievement. *Research in the Teaching of English, 25*, 261-290.

Nystrand, M. & Gamoran, A. (1996). *The effects of classroom discourse on writing development.* Paper presented at the 1996 Convention of the American Educational Research Association. Madison: The National Research Center on English Learning and Achievement.

Nystrand, M., Cohen, A., & Dowling, N. (1993, January). Addressing reliability problems in the portfolio assessment of college writing. *Educational Assessment, 1*, 53-70.

Schutz, A. (1967). *Collected papers, vol. 1: The problem of social reality.* The Hague: Martinus Nijhoff.

Scollon, R. & Scollon, S. B. (1980). *The literate two-year old: The fictionalization of self.* Typescript, Center for Cross-Cultural Studies, University of Alaska.

Sperling, M. (1995, January). Uncovering the Role of Role in Writing and Learning to Write: One Day in an Inner-City Classroom. *Written Communication, 12*, 93-132.

Sperling, M. (1996). Revisiting the writing-speaking connection: Challenges for research on writing and writing instruction. *Review of Educational Research, 66*, 53-86.

Stevens, G. & Cho, J. H. (1985). Socioeconomic indexes and the new 1980 census occupational classification scheme. *Social Science Research, 14*, 142-168.

Sweigart, W. (1991). Classroom talk, knowledge development, and writing. *Research in the Teaching of English, 25*, 497-509.

Teale, W. & Sulzby, E. (Eds.). (1986). *Emergent literacy: Writing and reading.* Norwood, NJ: ABLEX Publishing Corp.

Wertsch, J. V. & Hickmann, M. (1987). Problem solving in social interaction: A microgenetic analysis. In M. Hickmann (Ed.), *Social and functional approaches to language and thought* (pp. 251-266). New York: Academic Press.